

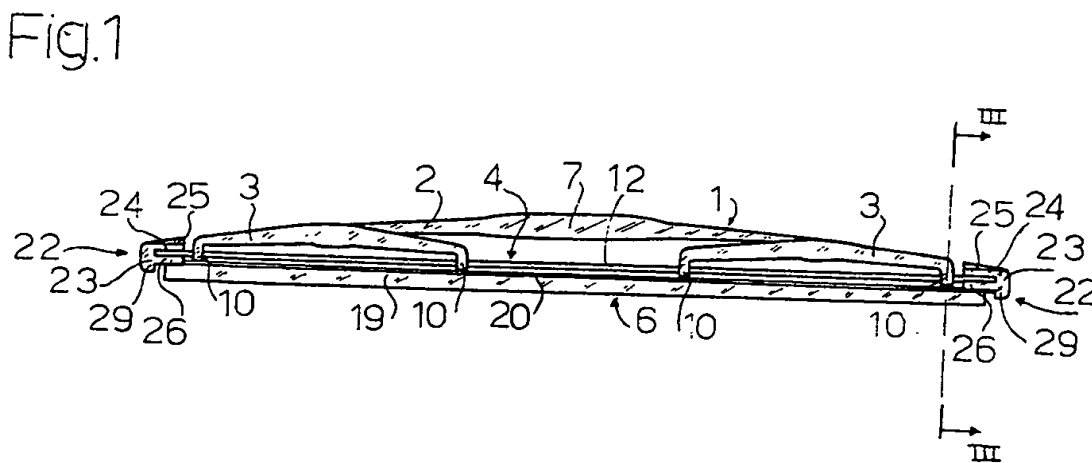
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(54) Windscreen wiper blade

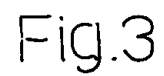
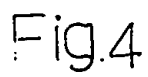
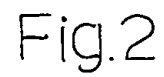
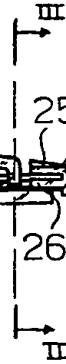
(57) A windscreen wiper blade is provided with end caps (22) to limit longitudinal travel of housing component (4) with respect to supporting frame (1), each end cap having a portion (29) facing wiping component (6) to limit longitudinal travel of the wiping component (6) relative to housing component (4).



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The drawing originally filed was informal and the print here reproduced is taken from a later filed formal copy.

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SPECIFICATION

Windscreen wiper

The present invention refers to a windscreen wiper. Such wipers, as it is known, evidence a supporting frame including a main support having a curved shape fit for being connected to the arm of an actuating contrivance and supporting equalizing elements with a longitudinal element in which an upper protruding part of a wiping element is housed, such a wiping element being of rubber. To rise the deformability and to allow an easy coupling between the equalizer and the longitudinal component, the upper part of the latter shows areas with reduced thickness. The equalizers show further an end with a tailpiece facing the corresponding end of the longitudinal component in order to obtain a limitation of the movements of the wiping component in regard to the above mentioned longitudinal component.

The above described wipers have some drawbacks.

They require especially a long time for their assembling and their production cost is considerable due to peculiar machining processes to be carried out on the longitudinal component (reduction of thickness) and on the equalizing elements (tailpiece) to allow the coupling of the two and to avoid the sliding out of the wiping element.

The present invention aims at obtaining a wiper not showing the above drawbacks, i.e. requiring a short assembling time, allowing an automatic assembling without specific machining operations on the longitudinal element and on the equalizers.

According to the present invention a windscreen wiper is built up having a supporting frame supporting an en bloc cleaning element, characterized by the fact that at the ends of said housing element there appear in duly connected position through tripping elements some relevant caps in order to obtain a limitation of the longitudinal movement of said housing element in regard to the supporting frame, and showing a portion facing said wiping component, in order to obtain a limiting of the longitudinal travel of said wiping element in respect of the a/m housing component.

To better understand the present invention, we are now describing a privileged embodiment of the same, only as a non-limitative example, with reference to the enclosed drawings in which:

Figure 1 represents a side view of a windscreen wiper according to the present invention;

Figure 2 is a perspective view (sectional) of a component in which the wiping component of the wiper of Figure 1 is housed (figure on a magnified scale);

Figure 3 is a sectional view following the line III—III of the wiper of the Figure 1 (on a magnified scale); and

Figure 4 is a lateral view, on a magnified scale, of a detail of the wiper appearing on Figure 1.

According to what appears on Figures 1 and 2, the windscreen wiper of the present invention

65 shows a frame 1, playing a supporting role, made of metal or of plastic material, which includes a main supporting element 2 having a curved shape, at the two ends of which are coupled, in a known way, with a possibility to rotate, two equalizing elements 3, which bear (in a way that will be described hereinafter) an element 4 having a longitudinal shape and housing a wiping element 6, usually made of rubber. The main supporting component 2 shows in its central area, and in a known way, a through hole (non appearing on the drawing) limited by two side walls 7 between which there is a crosspiece (non appearing on the drawing) connected en bloc and allowing the coupling, in a known way, with an actuating arm (non appearing on the drawing) of the windscreen wiper itself. The two equalizing elements 3 show at each end a couple of feet 10 (Figure 3) which protrude vertically downwards and terminate with an end portion 11 bent horizontally towards the centre of the component 4. Such component 4 evidences an upper flat portion 12 from which two side portions 13 are starting. Such portions 13 give birth downwards to two longitudinal wings 16 (in horizontal position) running in the direction of the centre of the component 4 and engaging at a certain distance between them, so as to form an internal cavity having a T section for the component 4.

In this cavity an upper portion 17 is housed, having a corresponding T section and belong to the wiping element 6, which evidences on its lower portion a vertical wiping blade 19 and, centrally, two horizontal wings 20 looking outwards and housing in the space limited by the upper portion 17 the wings 16 of the component 4. This component 4 is made en bloc possibly of plastic material obtained through a drawing process.

According to what illustrated in Figures 1 and 4, the ends of the longitudinal piece 4 are trip engaged with relevant caps 22 having a vertical wall 23 from the upper end of which starts horizontally a portion 24 forming in its upper part a portion 25 having a growing height, so as to form a curved steady profile meshing with the inner end profile of the equalizer 3. Two parallel horizontal wings 26 start from the central portion of the wall 23, which include the longitudinal piece 4 at the level of the side portions 13. In the central area of the upper rim of the wings 16 starts a row of teeth 27 moving towards portion 24 and showing a decreasing height from the outer to the inner side of the wiper. The teeth 27 are housed in a tripping way inside relevant cuts 28 (Figure 2) in the side rims of the upper flat portion 12 of the element 4. From wall 23 starts vertically and downwards a tailpiece 29 facing the upper portion 17 of the wiping component 6 in order to limit the longitudinal travel of same along the inner cavity of the component 4.

The assembling of the component 4 on the supporting frame 1, in order to get the windscreen wiper according to the present invention, is carried out as follows:

After coupling the wiping component 6 with the relevant housing component 4, the latter is moved longitudinally so as to be fixed to the feet 10 of the equalizers 3, so that the end portions 11

5 enclose the side portions 13 under the upper portion 12. Finally the caps 22 are trip-inserted at the longitudinal ends of component 4.

The advantages connected with the present invention are therefore obvious.

10 In particular by using the wiper of the present invention one obtains the advantage of being able to use the component 4 in plastic material, with an easy possibility of coupling easily and rapidly to the support 1 in an automatic way, because it is

15 sufficient to realize a simple insertion along the feet 10 of component 4 and to fix at the ends of same the caps 22. The connection between the wiping component 6 and the component 4 acting as housing is then maintained by tailpiece 29 of

20 cap 22.

It is finally clear that the embodiment of the present invention can be modified and varied without leaving the area covered by the present invention.

25 In particular the triggering system used in fixing the caps 22 to the ends of component 4 can be carried out in different ways. E.g. the portion 24 can build vertically, towards the inner side of the cap 22, a tooth to be inserted through a triggering

30 action into a cut opened in the upper wall portion 12 of the component 4.

CLAIMS

1. A windscreen wiper having a supporting frame (1) supporting a housing component (4) and

35 made en bloc, a wiping component (6), characterized by the fact that at the ends of said housing component (4) there are connected through tripping devices some caps (22) in order to obtain a longitudinal travel limitation of said

40 housing component (4) with respect to said supporting frame (1), with a portion (29) facing

said wiping component (6) in order to obtain a travel limitation in longitudinal direction of said wiping component (6) with respect to said housing component (4).

2. Wiper according to claim 1, characterized by the fact that said cap (22) has two side wings (26) which enclose said housing component (4) under its upper position (12) and shows an upper portion

50 (25) separated by a certain space from the two above wings which evidences a cut for the insertion of said housing component (4).

3. Wiper according to claim 1 or 2, characterized by the fact that said cap (22) evidences an upper profile continuing the upper profile of an equalizer (3) of said supporting frame (1) sustaining said housing component (4).

4. Wiper according to claims 2 or 3, characterized by the fact that said trips include a

60 tooth (27) starting from each of said side wings (26) and which can be housed through a tripping action in a cut (28) obtained on said upper portion (12) of said housing component (4).

5. Wiper according to claims 2 or 3 characterized by the fact that said triggering elements include a tooth (27) starting from said upper portion (25) of said cap (22) towards the inner part of same, to be housed in operation through a trigger action into a cut obtained on said

70 upper portion (12) of said housing component (4).

6. Wiper according to one of the previous claims, in which the supporting frame (1) evidences equalizing components (3) supporting said housing component (4), characterized by the

75 fact that said equalizing elements (3) evidence feet (10) at their end supporting an upper portion (12) of said housing component.

7. Wiper according to one of the previous claims, characterized by the fact that said housing component (4) is in plastic material obtained through drawing operations and that also said cap (22) is in plastic material.

8. Windscreen wiper as described above and illustrated in reference to enclosed drawings.